

Neurotrophic ulcers or injuries to the replanted part are a constant problem during this recovery phase.

The massive amount of muscle tissue present in high amputations is extremely vulnerable to ischemia and replantation of the part may result in life-threatening complications when the circulation is reestablished. Time is of the essence in all major limb replants. Immediate arterial and venous shunts should be inserted to shorten this critical period of ischemia before bone stabilization or any soft-tissue repair.

The most common extremity salvage situation exists when there has been a severe compound comminuted lower extremity fracture with extensive soft-tissue injury. Exposed bones, joints and tendons with or without metal plates and rods must be covered by vascularized tissue. The use of proximally and distally based muscle and myocutaneous flaps often leads to further tissue loss in an already severely traumatized extremity. Wound cover can best be achieved by microvascular transplantation of muscle, with the vascular supply anastomosed to untraumatized proximal vessels. These pliable muscle structures can be wrapped around and folded into defects, obliterating dead space and bringing in needed blood supply. Ideally these transplants should be done as primary or delayed primary operations. If reconstruction is delayed for several weeks, severe problems with acute and chronic osteomyelitis are encountered. When wound closure and control of infection have been achieved, then secondary vascularized bone grafts and other procedures can be undertaken. None of these operations are indicated if the nerve supply to the sole of the foot has been destroyed.

HARRY J. BUNCKE, MD  
LEONARD GORDON, MD  
BERNARD S. ALPERT, MD

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## Craniofacial Surgery

WHILE THE comprehensive care of rare and highly complex congenital craniofacial anomalies has been left to a few centers, the application of craniofacial surgical principles and techniques has become widespread.

The classic use of autogenous iliac and costal bone grafts to repair the facial skeleton has been largely replaced by the use of cranial bone grafts. The outer table and the diploë can be safely harvested as a split graft. Aside from its use in craniofacial surgical procedures, it has been applied to correct saddle-nose deformities, erase alveolar clefts in children with cleft palate, repair orbital floor fractures and restore the contour of cranial defects. Resorption of the graft is minimal. Donor site pain and morbidity, when com-

pared with that of the ilium and rib cage, are greatly reduced, as is the hospital stay.

In cases of severe maxillofacial trauma, the availability of computed tomographic scanning, immediate bone grafting and direct exposure and fixation of the fractures have improved the end results and lessened the need for secondary reconstruction. Difficult late residual problems such as enophthalmos can also be corrected by using craniofacial surgical approaches and techniques.

Parts of the facial skeleton are frequently electively moved to improve form and function. In conjunction with an orthodontist, difficult skeletal bite deformities can be corrected by simple procedures. Both jaws can safely be simultaneously repositioned to bring about dramatic changes.

Working as a team, plastic surgeons and neurosurgeons have augmented the time-honored stripping of craniosynostosis by repositioning the deformed bones in early infancy. The deleterious late deformity is thus lessened. In an older age group, treatment of a disfiguring craniofacial malformation has been simplified and the operating time drastically reduced, hence decreasing the morbidity and mortality of the procedure.

Thus, while the refinement in craniofacial procedures continues in selected centers, the spin-off of techniques enjoys wide application to the entire specialty of plastic surgery.

HENRY K. KAWAMOTO, Jr, MD

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## Recent Advances in Ear Reconstruction

RECONSTRUCTION OF THE EAR for microtia, traumatic loss or burn sequelae has, until recently, rarely resembled the natural color and contour of a normal ear. After undergoing numerous procedures, patients were often left with noticeably deformed, scar-encased auricular facsimiles. Silicone frameworks have been disappointing as they have an unacceptably high incidence of eventual exposure, infection and extrusion.

In virgin microtia, skin coverage is usually not a problem. Brent has shown that precision sculpting of autogenous rib cartilage with exaggeration of natural prominences produces excellent contours. Proper projection can be obtained by a supportive postauricular cartilage block. A deep posterior sulcus is not reconstructed.

For posttraumatic losses or extensively scarred, failed previous surgical procedures, the temporoparietal fascia used as a vascularized flap affords the greatest opportunity for an aesthetic reconstruction. The old scar is totally resected and the carved rib cartilage is inset. The temporoparietal fascia is then